

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference PHNL040748WO	FOR FURTHER ACTION	See item 4 below
International application No. PCT/IB2005/052053	International filing date (<i>day/month/year</i>) 22 June 2005 (22.06.2005)	Priority date (<i>day/month/year</i>) 28 June 2004 (28.06.2004)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant KONINKLIJKE PHILIPS ELECTRONICS N.V.		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

- | | | |
|-------------------------------------|--------------|---|
| <input checked="" type="checkbox"/> | Box No. I | Basis of the report |
| <input type="checkbox"/> | Box No. II | Priority |
| <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> | Box No. VI | Certain documents cited |
| <input checked="" type="checkbox"/> | Box No. VII | Certain defects in the international application |
| <input checked="" type="checkbox"/> | Box No. VIII | Certain observations on the international application |

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Date of issuance of this report 28 December 2006 (28.12.2006)
Facsimile No. +41 22 338 82 70	Authorized officer <div style="text-align: center; font-weight: bold; font-size: 1.2em;">Cecile Chatel</div> e-mail: pt13@wipo.int

PATENT COOPERATION TREATY

REC'D 08 NOV 2005

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From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/IB2005/052053

International filing date (day/month/year)
22.06.2005

Priority date (day/month/year)
28.06.2004

International Patent Classification (IPC) or both national classification and IPC
G01R33/561

Applicant
KONINKLIJKE PHILIPS ELECTRONICS N.V.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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Skalla, J

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IB2005/052053

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IB2005/052053

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	
	No: Claims	1-10
Inventive step (IS)	Yes: Claims	
	No: Claims	1-10
Industrial applicability (IA)	Yes: Claims	1-10
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

1. Re Item V: Reasoned statement under Rule 43bis.1(a)(i) PCT

1.1 Reference is made to the following document:

D1 = Jurrissen M. et al, "Diamond-SENSE: undersampling on a crystallographic grid",
Proceedings of the ISMRM, Twelfth Meeting Proceedings, 15.-21.05.2004, Kyoto,
Japan

1.2 Lack of novelty (Art. 33(2) PCT)

Claim 1:

It would appear that the subject-matter of the invention had already been presented at the 2004 ISMRM Meeting, about one month before the priority date of the application, so that the present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT. In particular, document D1 discloses (the references in parentheses applying thereto) a device for magnetic resonance imaging of a body placed in a stationary and substantially homogeneous main magnetic field (implicit feature), with receiving antennas (an eight-element head coil, see section "Results") for receiving phase encoded magnetic resonance signals from the body, which receiving antennas have sensitivity profiles (implicit feature), wherein the device is arranged to acquire the magnetic resonance signals with subsampling in two phase encoding directions (y and z, see Fig. 1) in correspondence with a predetermined FOV (Y and Z), reconstruct a 3-dimensional image containing folded-over image values (see section "Theory" disclosing the generation of 3-dimensional images with aliasing artifacts), and calculate image values at spatial positions within said FOV from the folded-over image values and the sensitivity profiles of the receiving antennas (see the results shown in Fig. 3), wherein the scheme of subsampling is selected such that the maximum number of folded-over image values is minimized and simultaneously the distances between the positions of the folded-over image values are maximized (see the "Introduction" and Fig. 2 disclosing an increase of the distance between backfolding positions; since the specific method steps are identical to those applied according to the present

application, it can be considered that the maximum number of folded-over positions is minimized with simultaneous maximization of the distances between the backfolding positions).

Claim 6: For the reasons given above, also the corresponding method according to claim 6 would appear to lack novelty w.r.t. D1.

Claim 9: The method of D1 is put into effect by means of a Philips Intera 1.5T making use of a computer code to implement the SENSE method.

Claim 2: See Fig. 1 (b) of D1.

Claim 3: See the section "Theory" in D1.

Claims 4(7,10) and 5(8): See, for instance, the example of D1 with $R=2$, which comes within the scope of claims 4(7,10) and 5(8).

2. Re item VII: Certain defects in the international application

- 2.1 In accordance with the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 should be mentioned in the description, and this document should be identified therein.
- 2.2 The independent claims would have to be brought in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (probably document D1) being placed in the preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).

3. Re item VIII: Objections pursuant to Art. 6 PCT

- 3.1 Claim 1 refers to "*the maximum* number of folded-over image values" lacking an antecedent definition. The same objection holds for the other independent claims.

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/IB2005/052053

- 3.2 Claims 1,6 and 9 do not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined. The claims attempt to define the subject-matter in terms of the result to be achieved (minimization of the maximum number of folded-over image values and maximization of the distances between the backfolding positions), without providing the technical features necessary for achieving this result.

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Name and mailing address of the ISA:



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Skalla, J

Telephone No. +49 89 2399-2252



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International application No.

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